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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,543	01/16/2004	Young-Ki Kim	6192.0348.US	5598

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EXAMINER	
BODDIE, WILLIAM	

ART UNIT	PAPER NUMBER
2629	

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/758,543	KIM ET AL.	
	Examiner	Art Unit	
	William Boddie	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9,10 and 13* is/are rejected.

7)☒ Claim(s) *3, 7-8 and 11-12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 3 is objected to because of the following informalities: lines 2 and 4 contain grammatical errors. Specifically, the tense of the word 'belong' is incorrect in both lines. Replacing 'belong' with perhaps 'belonging' would effectively correct the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5-6 and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Nitta et al. (US 6,801,178).

With respect to claim 1, Nitta discloses, an apparatus for driving a liquid crystal display (col. 1, lines 8-10) including a plurality of pixels arranged in a matrix (clear from fig. 2), the apparatus comprising:

a data driver (26-28, 29-1 – 29-8 in fig. 1) selecting data voltages from a plurality of gray voltages corresponding to image data representing at least a gray (VG0-VG255 in fig. 6) and applying the data voltages to the pixels (col. 5, lines 60-63); and

a signal controller (1 in fig. 1,19) supplying the image data to the data driver (clear from fig. 1) and generating digital gray data based on a distribution of the gray of the image data for a frame (col. 10, lines 3-27; col. 10, lines 33-68; also see fig. 18).

With respect to claim 2, Nitta discloses, the apparatus of claim 1 (see above), wherein the apparatus further comprises a digital/analog converter converting the digital gray data (5 in fig. 1) from the signal controller (1 in fig. 1) into analog voltages (VG0-VG255 in fig. 6) and supplying the analog voltages (16 in fig. 1) to the data driver as gray voltages.

With respect to claim 3, Nitta discloses, the apparatus of claim 1 (see above), wherein each image data has a luminance data having a value (0-255 for example in fig. 18), which is determined by the at least a gray represented by the image data and belong to one of a plurality of value sections (0-31, 32-63 for example in fig. 18), and the gray distribution is associated with the number of the image data belong to respective value sections (clear from fig. 18; also see col. 10, lines 18-32).

With respect to claim 5, Nitta discloses, the apparatus of claim 3 (see above), wherein the signal controller comprises a gray voltage generator reading out the image data for one frame (col. 8, lines 54-57; display data in fig. 19; 302 in fig. 19), calculating the gray distribution of the image data (303 in fig. 19), and modifying a standard gray voltage curve to obtain the digital gray data (304 in fig. 19).

With respect to claim 6, Nitta discloses, the apparatus of claim 5 (see above), wherein the gray voltage generator calculates the luminance data of the image data for one frame (col. 8, lines 54-57), calculates the number of the image data included in the value sections to obtain the gray distribution of the image data (302-303 in fig. 19; also see col. 10, lines 33-53).

With respect to claim 9, Nitta discloses, a method for driving a liquid crystal display (col. 1, lies 8-10), the method comprising:

reading out image data representing at least a gray for one frame (col. 8, lines 54-57);

calculating gray distribution of the read image data (fig. 18; also see 302-303 in fig. 19); and

modifying a standard gray voltage curve based on the calculated gray distribution to generate digital gray data (fig. 18; col. 10, lines 3-24).

With respect to claim 10, Nitta discloses, the method of claim 9 (see above), wherein the gray distribution calculation comprises:

calculating luminance data of the image data based on the at least a gray represented by the image data (note the x axis of the histogram in fig. 18, "brightness distribution," clearly Nitta is calculating luminance data; also see col. 10, lines 25-32); and

counting the number of the image data included in a plurality of sections of the luminance data (clear from fig. 18; also see specifically, col. 10, lines 18-24).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nitta et al. (US 6,801,178) in view of Kitahara et al. (US 6,847,377).

With respect to claim 4, Nitta discloses, the apparatus of claim 3 (see above), wherein each image data includes a set of image data portions for a predetermined number of respective colors (red, green and blue; fig. 10 for example).

Nitta does not expressly disclose, that the luminance data is an average of the grays of each color.

Kitahara discloses, an apparatus wherein each image data includes a set of image data portions for a predetermined number of respective colors (red, green and blue), and a luminance data of the image data is defined as an average of grays represented by the set of the image data portions forming in the image data (fig. 9; also note col. 14, lines 40-58 which further discloses the process of averaging the gray level of each subpixel together).

Kitahara and Nitta are analogous art because they are both from the same field of endeavor namely, grayscale conversion.

At the time of the invention it would have been obvious to one of ordinary skill in the art to average the subpixel gray scale values, as taught by Kitahara, to generate the luminance data of Nitta.

The motivation for doing so would have been to compensate for any offset between color depth and luminance, as well as calculate an accurate luminance value (Kitahara; col. 3, lines 25-26).

Therefore it would have been obvious to combine Kitahara with Nitta for the benefit of compensate offset between color depth and luminance to obtain the invention as specified in claim 4.

With respect to claim 13, Nitta discloses, the method of claim 10 (see above), wherein each image data includes a set of image data portions for a predetermined number of respective colors (red, green and blue; fig. 10 for example).

Nitta does not expressly disclose, that the luminance data is an average of the grays of each color.

Kitahara discloses, an apparatus wherein each image data includes a set of image data portions for a predetermined number of respective colors (red, green and blue), and a luminance data of the image data is defined as an average of grays represented by the set of the image data portions forming in the image data (fig. 9; also note col. 14, lines 40-58 which further discloses the process of averaging the gray level of each subpixel together).

Kitahara and Nitta are analogous art because they are both from the same field of endeavor namely, grayscale conversion.

At the time of the invention it would have been obvious to one of ordinary skill in the art to average the subpixel gray scale values, as taught by Kitahara, to generate the luminance data of Nitta.

The motivation for doing so would have been to compensate for any offset between color depth and luminance, as well as calculate an accurate luminance value (Kitahara; col. 3, lines 25-26).

Therefore it would have been obvious to combine Kitahara with Nitta for the benefit of compensate offset between color depth and luminance to obtain the invention as specified in claim 13.

Allowable Subject Matter

6. Claims 7-8 and 11-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nishimura et al. (US 6,580,410) discloses altering the grayscale voltage of a liquid crystal device. Kuriyama et al. (US 6,535,224) discloses altering the grayscale conversion based on the distribution of grayscale voltages of incoming image data. Specifically note figures 10 and 12.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William Boddie whose telephone number is (571) 272-0666. The examiner can normally be reached on Monday through Friday, 7:30 - 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Wlb
11/9/06

AMR A. AWAD
SUPERVISORY PATENT EXAMINER